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FINAL REPORT

ON

RISKS ASSOCIATED WITH THE TRANSPORTATION TO TREATMENT OF HAZARDOUS WASTE SUBSTANCES

PHASE II

TO

ENVIRONMENT COUNCIL OF ALBERTA
EDMONTON, ALBERTA

BY

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CALGARY, ALBERTA

DECEMBER, 1980

Alberta

ENVIRONMENT COUNCIL OF ALBERTA

This study evaluates risks associated with the transportation of hazardous wastes from a point of generation to a point of treatment. The Environment Council commissioned this study to obtain information with which to evaluate the effect that various patterns of distribution of treatment plants might have on transportation risks. In order to undertake the study, specifics were required on the distribution of generating sites, the number of truck loads of waste being transported and the location of treatment plants.

Basic inventory data were available from existing studies. The impact of changes in the inventory was studied by varying the volumes of hazardous waste originating in the two major areas of waste generation, Calgary and the Edmonton region.

Five destination points were selected for the analysis. These points do not indicate potential treatment plant sites. Rather they were Council's suggestion of areas to use in the analysis of alternative distribution patterns. The areas chosen were based on the distribution of waste volumes, public comments concerning treatment plant locations, and the need to identify the impact of different sites on transportation risk.

The report presents the relative risks involved in transporting wastes within Alberta to treatment plants. Most changes in the assumptions concerning the number of truck trips would only change the amount of risk, not the relative risks of different alternative configurations. Likewise treatment plants could be placed almost anywhere in the vicinity of the major sources of hazardous waste i.e., Calgary and Edmonton with little effect on the overall transportation risk because of the small impact such placement changes would have on the total loaded kilometres travelled.

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CHAPTER 1

INTRODUCTION

1.1 Introduction and Background

This report describes the results of the second phase of a study undertaken for the Environment Council of Alberta to examine the risks that are associated with the transportation of hazardous liquid waste from the location at which it is generated to the site of a treatment plant. The first phase of this study [2] examined the loading, transport, and unloading operations that are involved in the movement of hazardous liquid waste by tank truck. From an analysis of operating procedures and facilities in the field of waste management, fault trees were developed that portray the accident sequences in which hazardous waste might be released. Probabilities were estimated for the basic events of the fault trees, and the probabilities of occurrence and expected release volumes were then computed for several types of release incidents. The incidents for which risks were estimated included accidental release during truck loading and unloading operations, and accidental release during transport itself, either as the result of leakage from the tank or ancillary equipment, or as a result of a cargo spill in a traffic accident. In this report, the results of the transport risk analysis are applied to the evaluation of alternative treatment plant locations within the Province of Alberta.

1.2 Scope of the Work

The analysis presented in this report estimates the risk of tank trailer cargo spills that is associated with each of several alternative

configurations of treatment plants. In particular, for each alternative, the transport risk analysis results are used to estimate the probability that waste will be spilled as the result of a traffic accident, if the waste produced in one year at major waste generating locations is transported in 20-tonne tank trailer loads to the treatment plants hypothesized for the alternative. The risk analysis includes only cargo spills caused by traffic accidents, since the probability of other releases during transport is not particularly sensitive to route characteristics. For simplicity, the analysis is restricted to one truck type, the tank trailer.

The risk analysis of an alternative is based on an assumed geographical distribution of waste generation, and on the assumption that the waste produced in each location will be transported over the safest available route to a treatment plant. The locations of the hypothesized treatment plants and the assumed distribution of waste volumes therefore determine the routes that will be used for waste transport, and the number of truckloads that will be carried on each route each year. The total yearly probability of an accident cargo spill on each route may then be calculated from highway accident rates using the methods described in the Phase I report [2]. Furthermore, as an indicator of the total transport cost associated with an alternative, the analysis includes a calculation of the total distance travelled by loaded tank trucks each year while moving the waste to treatment plants.

The results presented in this report include an estimate of yearly spill probabilities and total loaded distance travelled by tank trucks for 14 treatment site configurations, including several cases in which one plant is specialized and will accept only wastes for incineration. These evaluations are repeated for several assumed distributions of waste volume among

generating locations within Alberta, and also for estimated volumes of waste entering the province from Saskatchewan and Manitoba. In addition to the cargo spill and loaded distance estimates, the report also presents, for each alternative, the geographical distribution of both accidents and waste traffic among the major highways of the province.

1.3 Phase II Project Outline

Five tasks were performed in Phase II:

(a) Discussion with E.C.A. of the alternative treatment plant configurations and waste volume distributions among generating locations.

(b) Identification of all routes joining the generating locations and treatment plants.

(c) Gathering of accident rate data for each route, and calculation of spill probabilities using the methods of Phase I.

(d) Selection of the best route between each generating location and each treatment plant.

(e) Evaluation of a subset of the evaluations with the accident rate statistics of several years.

The results of these tasks are presented in this volume. Chapter 2 describes the generating locations and alternative treatment site configurations, and the transportation routes joining them; Chapter 3 presents the analytical method; and Chapter 4 presents the tables that summarize the risk evaluation.

CHAPTER 2

DESCRIPTION OF WASTE GENERATING LOCATIONS, TREATMENT PLANT CONFIGURATIONS, AND TRANSPORTATION ROUTES

2.1 General

Five areas within Alberta have been designated as hypothetical treatment plant locations, and 25 areas within Alberta as locations where various amounts of waste of different types will be generated. Saskatchewan and Manitoba are considered as waste generating locations in a separate analysis performed for each alternative configuration of treatment plants.

The basic unit of analysis in Phase II is the combination of:

(a) a set of one or more areas for treatment plant locations; in some cases one plant is assumed to accept waste only for incineration, and the other sites to accept only other waste types,

(b) a hypothesized distribution among the generating locations of yearly waste volumes; the total volume for each location is subdivided by waste type so that the consequences of treatment site specialization may be evaluated,

(c) a designated route for transporting waste from each generating location to each treatment plant.

The generating locations, treatment plants, and connecting routes are discussed in the following sections.

2.2 Generating Locations

Table 2.1 defines the waste categories and Tables 2.2a - c and 2.3 show the assumed distributions of waste among generating locations. Tables 2.2a - c represent three different assumptions regarding the north-south distribution of waste generation within Alberta.

The geographical distribution of waste generation was derived by the Environment Council of Alberta from studies [3, 4] of the distribution of waste-producing industries in Alberta and Western Canada. The waste volumes are measured by the number of tank truck trips from each location, assuming that tank trailers with 20 tonne capacity are used to transport the estimated annual volume of waste. Some of the loads may be partial; moreover, it has been assumed, for simplicity, that waste will be held at the generating location until a truck load has accumulated.

The waste volume estimates are intended only to provide an approximate picture of the geographical distribution of wastes and an estimate of the relative numbers of trucks hauling wastes from various locations. To assess the sensitivity of the relationship between transportation risks and treatment plant location to changes in the assumed waste distribution, the Environment Council arbitrarily varied the proportion of waste generated in the Edmonton - Fort Saskatchewan areas, and in Calgary. The risk analysis was repeated for each of the three assumed geographical waste distributions shown in Tables 2.2a - 2.2c. Table 2.2a is based on the proportions given in the Reid, Crowther inventory [3]. Table 2.2b increases the relative contribution from Calgary to 50% of that from Edmonton - Fort Saskatchewan, while in Table 2.2c, the contributions of the two areas are equal.

TABLE 2.1

HAZARDOUS WASTE CATEGORIES

PCBs

1. PCB Fluids and Contaminated Materials

OILS

2. Oils

SOLVENTS

3. Halogenated Solvent
4. Non halogenated Solvent
5. Solvents with Heavy Metals

SLUDGES

6. General Mixed Metal Bearing Sludges
7. Lead
8. Chronium
9. Copper
10. Aluminum
11. Magnesium

PESTICIDES

12. Off Spec, condemned and/or dilute pesticides

PROCESS

13. Textile Waste Treatment
14. Ink
15. Organic (Tannery Animal Waste)
16. Dust and Scrubber
17. Paint

AQUEOUS METAL WASTES

18. General Mixed Aqueous Metal Wastes

ACIDS

19. Acids with heavy metals
20. Acid Solutions

ALKALIS

21. Alkalis with heavy metals
22. Alkalis

CONCENTRATED ORGANICS

23. Plastics, Resins & Latex
24. Phenols

OTHER

25. Cyanides
26. Phosphates
27. Explosives
28. Contaminated Containers and Equipment
29. Contaminated Soil and Sand
30. Asbestos
31. Ammonia
32. Scrap Batteries
33. Waste Activated Carbon
34. Infectous Waste
35. Tank Bottoms
36. Chemicals
37. Sulphur
38. Fly Ash
39. Photo Chemicals
40. Spent Catalyst

Source: Reid, Crowther & Partners Ltd. - Hazardous Wastes in Alberta

TABLE 2.2a

PROJECTED DISTRIBUTION OF

WASTES IN ALBERTA (I)

WASTE CATEGORIES

ORIGIN	1	3	4	6	8	10	12	14	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	35	36	39	TOT
	Number of Trips																												
Bonnyville	1	1	1	1	0	0	0	1	0	1	0	0	3	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	19
Bowden	0	1	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	1	3	0	10
Calgary	1	10	30	40	1	2	5	1	1	6	1	15	105	1	20	4	1	10	1	2	50	3	1	1	1	10	30	20	373
Carseland	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Coleman	0	1	0	0	0	0	0	0	0	0	0	0	17	0	10	0	0	0	0	0	0	0	0	0	0	1	18	0	47
Cochrane	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Drayton Valley	0	1	0	0	0	0	0	0	0	0	0	0	14	0	11	0	0	0	0	0	0	0	0	0	0	1	13	0	40
Edmonton	1	25	190	50	5	0	5	1	2	7	1	15	850	3	205	15	2	50	1	15	50	15	1	0	1	45	500	35	2090
Edson	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. McMurray	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. Saskatchewan	1	3	6	79	0	2	0	1	2	1	1	0	4	0	13	4	0	0	1	9	4	4	1	0	1	8	0	0	145
Grande Prairie	1	2	1	1	0	0	0	1	0	1	0	0	14	0	5	1	0	0	1	4	1	0	1	0	0	2	10	0	46
Lacombe	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lethbridge	1	1	1	2	0	0	0	1	0	1	0	0	4	0	1	0	0	0	1	4	10	1	1	0	0	1	0	1	31
Lloydminster	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Medicine Hat	1	3	30	4	1	0	1	1	0	1	0	0	41	0	3	0	0	0	1	5	1	4	1	0	0	1	0	1	100
Nisku	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	9
Red Deer	2	4	33	6	0	0	1	2	0	2	0	0	45	0	4	1	0	0	2	9	2	4	2	0	0	2	0	1	122
Redwater	0	1	1	18	0	1	0	0	0	0	1	0	0	0	3	0	0	0	0	1	1	4	0	0	1	2	0	0	34
Rocky Mtn House	0	1	0	0	0	0	0	0	0	0	0	0	10	0	4	0	0	0	0	0	0	0	0	0	0	1	11	0	27
Rosedale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Spruce Grove	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	6
Standard	0	1	0	0	0	0	0	0	0	0	0	0	9	0	4	0	0	0	0	0	0	0	0	0	0	1	9	0	24
Two Hills	0	1	0	13	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	20
Whitecourt	0	1	0	0	0	0	0	0	0	0	0	0	25	0	10	0	0	0	0	0	0	0	0	0	0	2	23	0	61
																													3261

TABLE 2.2b

PROJECTED DISTRIBUTION OF

WASTES IN ALBERTA (II)

WASTE CATEGORIES

ORIGIN	1	3	4	6	8	10	12	14	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	35	36	39	TOT
	Number of Trips																												
Bonnyville	1	1	1	1	0	0	0	1	0	1	0	0	3	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	19
Bowden	0	1	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	1	3	0	10
Calgary	1	13	75	56	2	3	3	1	2	5	1	10	320	1	80	8	1	20	1	9	35	7	1	1	1	21	177	18	873
Carseland	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Coleman	0	1	0	0	0	0	0	0	0	0	0	0	17	0	10	0	0	0	0	0	0	0	0	0	0	1	18	0	47
Cochrane	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Drayton Valley	0	1	0	0	0	0	0	0	0	0	0	0	14	0	11	0	0	0	0	0	0	0	0	0	0	1	13	0	40
Edmonton	1	22	146	44	4	0	7	1	1	8	1	20	636	3	148	11	2	40	1	11	64	12	1	0	1	36	353	37	1611
Edson	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. Mcmurray	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. Saskatchewan	1	3	5	69	0	1	0	1	2	1	1	0	3	0	10	3	0	0	1	6	5	3	1	0	1	6	0	0	123
Grande Prairie	1	2	1	1	0	0	0	1	0	1	0	0	14	0	5	1	0	0	1	4	1	0	1	0	0	2	10	0	46
Lacombe	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lethbridge	1	1	1	2	0	0	0	1	0	1	0	0	4	0	1	0	0	0	1	4	10	1	1	0	0	1	0	1	31
Lloydminster	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Medicine Hat	1	3	30	4	1	0	1	1	0	1	0	0	41	0	3	0	0	0	1	5	1	4	1	0	0	1	0	1	100
Nisku	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	9
Red Deer	2	4	33	6	0	0	1	2	0	2	0	0	45	0	4	1	0	0	2	9	2	4	2	0	0	2	0	1	122
Redwater	0	1	1	18	0	1	0	0	0	0	1	0	0	0	3	0	0	0	0	1	1	4	0	0	1	2	0	0	34
Rocky Mtn House	0	1	0	0	0	0	0	0	0	0	0	0	10	0	4	0	0	0	0	0	0	0	0	0	0	1	11	0	27
Rosedale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Spruce Grove	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	6
Standard	0	1	0	0	0	0	0	0	0	0	0	0	9	0	4	0	0	0	0	0	0	0	0	0	0	1	9	0	24
Two Hills	0	1	0	13	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	20
Whitecourt	0	1	0	0	0	0	0	0	0	0	0	0	25	0	10	0	0	0	0	0	0	0	0	0	0	2	23	0	61
																													3260

TABLE 2.2c

PROJECTED DISTRIBUTION OF

WASTES IN ALBERTA (III)

WASTE CATEGORIES

ORIGIN	1	3	4	6	8	10	12	14	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	35	36	39	TOT
	Number of Trips																												
Bonnyville	1	1	1	1	0	0	0	1	0	1	0	0	3	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	19
Bowden	0	1	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	1	3	0	10
Calgary	1	19	113	84	3	2	5	1	3	7	1	15	479	2	119	11	1	30	1	13	52	11	1	1	1	31	265	27	1299
Carseland	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Coleman	0	1	0	0	0	0	0	0	0	0	0	0	17	0	10	0	0	0	0	0	0	0	0	0	0	1	18	0	47
Cochrane	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Drayton Valley	0	1	0	0	0	0	0	0	0	0	0	0	14	0	11	0	0	0	0	0	0	0	0	0	0	1	13	0	40
Edmonton	1	17	110	33	3	0	5	1	1	6	1	15	478	2	112	9	2	30	1	8	48	9	1	0	1	27	265	28	1214
Edson	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. Mcmurray	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Ft. Saskatchewan	1	2	3	52	0	2	0	1	1	1	1	0	2	0	7	3	0	0	1	5	4	2	1	0	1	8	0	0	98
Grande Prairie	1	2	1	1	0	0	0	1	0	1	0	0	14	0	5	1	0	0	1	4	1	0	1	0	0	2	10	0	46
Lacombe	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lethbridge	1	1	1	2	0	0	0	1	0	1	0	0	4	0	1	0	0	0	1	4	10	1	1	0	0	1	0	1	31
Lloydminster	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	4	1	0	1	0	0	1	0	0	17
Medicine Hat	1	3	30	4	1	0	1	1	0	1	0	0	41	0	3	0	0	0	1	5	1	4	1	0	0	1	0	1	100
Nisku	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	9
Red Deer	2	4	33	6	0	0	1	2	0	2	0	0	45	0	4	1	0	0	2	9	2	4	2	0	0	2	0	1	122
Redwater	0	1	1	18	0	1	0	0	0	0	1	0	0	0	3	0	0	0	0	1	1	4	0	0	1	2	0	0	34
Rocky Mtn House	0	1	0	0	0	0	0	0	0	0	0	0	10	0	4	0	0	0	0	0	0	0	0	0	0	1	11	0	27
Rosedale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Spruce Grove	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	6
Standard	0	1	0	0	0	0	0	0	0	0	0	0	9	0	4	0	0	0	0	0	0	0	0	0	0	1	9	0	24
Two Hills	0	1	0	13	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	20
Whitecourt	0	1	0	0	0	0	0	0	0	0	0	0	25	0	10	0	0	0	0	0	0	0	0	0	0	2	23	0	61
																													3264

TABLE 2.3

PROJECTED DISTRIBUTION OF

WASTES IN SASKATCHEWAN AND MANITOBA

	WASTE CATEGORIES																										
	1	3	4	6	8	10	12	14	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	35	36	39	TOT
ORIGIN	Number of Trips																												
Manitoba	1	35	0	31	25	2	0	0	1	0	0	0	0	0	0	10	1	30	0	1	0	0	0	0	5	0	28	65	235
Saskatchewan N	0	5	0	12	2	0	2	0	1	0	0	0	0	0	0	6	0	2	0	1	0	0	0	0	0	0	23	45	99
Saskatchewan S	0	5	0	12	2	0	2	0	1	0	0	0	0	0	0	6	0	2	0	1	0	0	0	0	0	0	23	45	99
																													433

2.3 Treatment Plant Locations

The five possible areas for treatment plant locations are widely distributed throughout the province. The five areas have been designated as: Northern Isolated (NI), Near Edmonton (NE), Central (C), Near Calgary (NC), and Southern Isolated (SI). Table 2.4 shows the fourteen alternative combinations of treatment plant areas that have been evaluated.

2.4 Routes Between Generating Location and Treatment Plants

Between most generating locations and treatment plants, a number of candidate truck routes could be identified. A candidate route must satisfy several criteria: none of its segments may have weight restrictions, its total length must be reasonably close to the length of the most direct route, and any portion of the route that passes through a city must be a designated truck route. The routes which satisfy these criteria consist of segments of primary highway and of urban truck routes.

The final choice of a route between each generating location and treatment plant was based on the analysis described in Chapter 3.

TABLE 2.4

ALTERNATIVE COMBINATIONS OF TREATMENT FACILITY LOCATIONS AND SPECIALIZATION

ALTERNATIVE	LOCATION OF FACILITY				
	Northern Isolated	Near Edmonton	Central	Near Calgary	Southern Isolated
1	A				
2		A			
3			A		
4				A	
5					A
6	A				A
7		A		A	
8	A	A	A	A	A
9	I	O			
10	I			O	
11	I	O		O	
12		O			I
13				O	I
14		O		O	I

LEGEND: A - All Waste types treated at facility

I - Incineration only at facility

O - Other (non-incin.) treatments only

CHAPTER 3

ANALYSIS OF TRANSPORTATION RISKS

3.1 General Description

The analysis of transportation risks for each combination of generating location assumptions and treatment plant locations is based on three sets of data: the volume of each waste type produced at each generating location, the treatment plants that are available and their capabilities, and spill risks for the routes that link each generating location to the treatment plants. The first step in the risk analysis, therefore, is the assignment of a route between each generating location and treatment plant. Thereafter, the evaluation of transportation risk involves the calculation of spill probabilities, using the assumption that a treatment plant will be chosen for the waste from a generating location by choosing the route with the least spill risk from among the assigned routes linking the location to the available treatment plants.

3.2 Assignment of Routes Between Generating Locations and Treatment Plants

Alberta Transportation accident rates for Alberta highway control sections [1], and the cargo spill probabilities estimated in Phase I for various highway types, were used to compute the total transportation risk for candidate routes between each generating location and treatment plant. As described in Section 2.4, these candidate routes have no weight restrictions, and are reasonably direct routes. The safest of the candidate routes from the generating location to the treatment plant was identified and designated as the assigned route between the generating location and treatment plant.

Because spill risk on a route is a function of both the route's length and accident rate, the assigned routes tend to be the shortest available, although there were some exceptions in which longer routes with low accident rates were chosen over short routes with high accident rates. Of course, a different assignment might have been made if transportation cost had been considered in route choice, but the only criterion used here was the minimization of cargo spill risks.

3.3 Calculation of Risks for an Alternative

In the evaluation of risks for a particular configuration of treatment plants, a treatment site for the waste from a generating location is selected by choosing the safest of the assigned routes joining the location to the treatment sites in the configuration. This process is repeated for each generating location, including the "locations" which are the entry points for waste originating outside the province. Once the assignment of treatment facilities to generating locations is complete, an estimate is computed of the number of spill accidents that will occur during the transport of waste from the generating locations to the assigned treatment facilities.

The specialization of waste treatment facilities is accommodated in the analysis by performing a separate route and treatment plant selection for each category of waste generated at a location. A treatment plant is selected for each category by choosing the safest route from the location to a treatment plant that can process that category of waste.

Two basic types of results were generated:

(a) Route summary tables, giving for each generating location a selected route to a treatment plant, the length of the route, the number of truckloads transported over the route in one

year, and the yearly probability of a traffic accident involving a cargo spill.

(b) Highway segment tables, showing the yearly waste traffic and accident probability for major segments of the provincial highway system.

These results are produced for many combinations of the generating location assumptions and the treatment plant configurations that were described in Chapter 2.

3.4 Replication of Analysis

Most of the analysis reported here was based on the most recent year (1977) for which Alberta Transportation provides complete accident rates. To ensure that the evaluation of treatment plant alternatives was not influenced by some idiosyncrasy of the traffic statistics for that single year, the risk calculations for many of the alternatives were repeated, based on the accident rate statistics for both of 1975 and 1976. The results of that replication are reported in Chapter 4.

CHAPTER 4

ROUTE AND HIGHWAY TABLES

4.1 Route and Highway Summary Tables

Tables 4.1 to 4.42 present the results of the transportation risk analysis of 42 combinations of treatment plant alternatives and assumed geographical distributions of waste generation. A pair of tables appear for each combination: a Route Summary Table, and a Highway Summary Table, as described in Section 3.3. The three distributions of waste volume among the generating locations are designated Alberta (I), Alberta (II), and Alberta (III), corresponding to the distributions given in Tables 2.2a, 2.2b, and 2.2c respectively. Risk analyses for alternatives 1 to 8, as defined in Table 2.4, were performed for all three distributions. For the remaining alternatives (9 to 14), the Alberta (II) distribution was omitted, since the risk measures for this distribution always fell between those of the other two. For each of the alternatives 9 to 14, a risk estimate was computed for the transportation of waste from Saskatchewan and Manitoba to the Alberta treatment plants.

The yearly spill probability estimates presented in the tables should be regarded as a measure of the relative risk associated with the alternative treatment plant configurations, since insufficient historical data is available to allow a precise absolute estimate of spill probabilities. The estimates, however, do provide a good measure of relative risk, since they are based on the best data available. Furthermore, as Section 4.2 shows, when risk calculations are repeated independently for the

TABLE 4.1a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	19
Bowden - Site NI	320	0.001	10
Calgary - Site NI	430	0.032	373
Carseland - Site NI	490	0.000	1
Coleman - Site NI	660	0.006	47
Cochrane - Site NI	450	0.000	3
Drayton Valley - Site NI	260	0.003	40
Edmonton - Site NI	130	0.081	2090
Edson - Site NI	320	0.001	17
Ft. Mcmurray - Site NI	390	0.001	17
Ft. Saskatchewan - Site NI	120	0.006	145
Grande Prairie - Site NI	600	0.007	46
Lacombe - Site NI	260	0.000	1
Lethbridge - Site NI	630	0.004	31
Lloydminster - Site NI	230	0.001	17
Medicine Hat - Site NI	710	0.013	100
Nisku - Site NI	160	0.000	9
Red Deer - Site NI	280	0.007	122
Redwater - Site NI	70	0.001	34
Rocky Mtn House - Site NI	340	0.002	27
Rosedale - Site NI	470	0.000	1
Spruce Grove - Site NI	150	0.000	6
Standard - Site NI	500	0.002	24
Two Hills - Site NI	100	0.001	20
Whitecourt - Site NI	300	0.005	61
TOTAL		0.176	3261
Loaded km travelled/yr		727682	

TABLE 4.1b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.015	589
Hwy 2: Jct 11 - Jct 12	16.6	0.002	738
Hwy 2: Jct 12 - Edmonton	108.6	0.012	789
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	145
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.086	3142
Hwy 28: Jct 63 - Jct 857	59.3	0.031	3205
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.2a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	19
Bowden - Site NI	320	0.001	10
Calgary - Site NI	430	0.076	873
Carseland - Site NI	490	0.000	1
Coleman - Site NI	660	0.006	47
Cochrane - Site NI	450	0.000	3
Drayton Valley - Site NI	260	0.003	40
Edmonton - Site NI	130	0.062	1611
Edson - Site NI	320	0.001	17
Ft. Mcmurray - Site NI	390	0.001	17
Ft. Saskatchewan - Site NI	120	0.005	123
Grande Prairie - Site NI	600	0.007	46
Lacombe - Site NI	260	0.000	1
Lethbridge - Site NI	630	0.004	31
Lloydminster - Site NI	230	0.001	17
Medicine Hat - Site NI	710	0.013	100
Nisku - Site NI	160	0.000	9
Red Deer - Site NI	280	0.007	122
Redwater - Site NI	70	0.001	34
Rocky Mtn House - Site NI	340	0.002	27
Rosedale - Site NI	470	0.000	1
Spruce Grove - Site NI	150	0.000	6
Standard - Site NI	500	0.002	24
Two Hills - Site NI	100	0.001	20
Whitecourt - Site NI	300	0.005	61
TOTAL		0.200	3260
Loaded km travelled/yr		875805	

TABLE 4.2b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.028	1089
Hwy 2: Jct 11 - Jct 12	16.6	0.003	1238
Hwy 2: Jct 12 - Edmonton	108.6	0.021	1289
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	123
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.086	3141
Hwy 28: Jct 63 - Jct 857	59.3	0.031	3204
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.3a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	19
Bowden - Site NI	320	0.001	10
Calgary - Site NI	430	0.113	1299
Carseland - Site NI	490	0.000	1
Coleman - Site NI	660	0.006	47
Cochrane - Site NI	450	0.000	3
Drayton Valley - Site NI	260	0.003	40
Edmonton - Site NI	130	0.047	1214
Edson - Site NI	320	0.001	17
Ft. Mcmurray - Site NI	390	0.001	17
Ft. Saskatchewan - Site NI	120	0.004	98
Grande Prairie - Site NI	600	0.007	46
Lacombe - Site NI	260	0.000	1
Lethbridge - Site NI	630	0.004	31
Lloydminster - Site NI	230	0.001	17
Medicine Hat - Site NI	710	0.013	100
Nisku - Site NI	160	0.000	9
Red Deer - Site NI	280	0.007	122
Redwater - Site NI	70	0.001	34
Rocky Mtn House - Site NI	340	0.002	27
Rosedale - Site NI	470	0.000	1
Spruce Grove - Site NI	150	0.000	6
Standard - Site NI	500	0.002	24
Two Hills - Site NI	100	0.001	20
Whitecourt - Site NI	300	0.005	61
TOTAL		0.221	3264
Loaded km travelled/yr		1002749	

TABLE 4.3b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.039	1515
Hwy 2: Jct 11 - Jct 12	16.6	0.005	1664
Hwy 2: Jct 12 - Edmonton	108.6	0.028	1715
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	98
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.087	3145
Hwy 28: Jct 63 - Jct 857	59.3	0.031	3208
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.4a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Bowden - Site NE	240	0.000	10
Calgary - Site NE	340	0.020	373
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	47
Cochrane - Site NE	360	0.000	3
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.016	2090
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.001	145
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.003	31
Lloydminster - Site NE	200	0.001	17
Medicine Hat - Site NE	620	0.010	100
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	6
Standard - Site NE	420	0.002	24
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
TOTAL		0.076	3261
Loaded km travelled/yr		475822	

TABLE 4.4b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.015	589
Hwy 2: Jct 11 - Jct 12	16.6	0.002	738
Hwy 2: Jct 12 - Edmonton	108.6	0.012	789
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.002	789
Hwy 15: Fort Sask - Jct 45	20.3	0.012	3154
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.002	3009
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2220
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	3009
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	3171
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.5a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Bowden - Site NE	240	0.000	10
Calgary - Site NE	340	0.048	873
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	47
Cochrane - Site NE	360	0.000	3
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.012	1611
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.000	123
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.003	31
Lloydminster - Site NE	200	0.001	17
Medicine Hat - Site NE	620	0.010	100
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	6
Standard - Site NE	420	0.002	24
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
TOTAL		0.100	3260
Loaded km travelled/yr		619072	

TABLE 4.5b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.028	1089
Hwy 2: Jct 11 - Jct 12	16.6	0.003	1238
Hwy 2: Jct 12 - Edmonton	108.6	0.021	1289
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.003	1289
Hwy 15: Fort Sask - Jct 45	20.3	0.012	3153
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.002	3030
Hwy 16: Jct 16A - Edmtn	7.0	0.003	1741
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	3030
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	3170
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.6a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Bowden - Site NE	240	0.000	10
Calgary - Site NE	340	0.071	1299
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	47
Cochrane - Site NE	360	0.000	3
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.009	1214
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.000	98
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.003	31
Lloydminster - Site NE	200	0.001	17
Medicine Hat - Site NE	620	0.010	100
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	6
Standard - Site NE	420	0.002	24
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
TOTAL		0.120	3264
Loaded km travelled/yr		741640	

TABLE 4.6b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.039	1515
Hwy 2: Jct 11 - Jct 12	16.6	0.005	1664
Hwy 2: Jct 12 - Edmonton	108.6	0.028	1715
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.003	1715
Hwy 15: Fort Sask - Jct 45	20.3	0.012	3157
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.002	3059
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1344
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	3059
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	3174
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.7a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site C	450	0.002	19
Bowden - Site C	110	0.000	10
Calgary - Site C	210	0.013	373
Carseland - Site C	200	0.000	1
Coleman - Site C	450	0.004	47
Cochrane - Site C	230	0.000	3
Drayton Valley - Site C	180	0.002	40
Edmonton - Site C	160	0.049	2090
Edson - Site C	350	0.001	17
Ft. Mcmurray - Site C	570	0.002	17
Ft. Saskatchewan - Site C	190	0.004	145
Grande Prairie - Site C	600	0.006	46
Lacombe - Site C	40	0.000	1
Lethbridge - Site C	410	0.002	31
Lloydminster - Site C	390	0.001	17
Medicine Hat - Site C	400	0.009	100
Nisku - Site C	130	0.000	9
Red Deer - Site C	60	0.001	122
Redwater - Site C	220	0.001	34
Rocky Mtn House - Site C	130	0.001	27
Rosedale - Site C	170	0.000	1
Spruce Grove - Site C	180	0.000	6
Standard - Site C	200	0.001	24
Two Hills - Site C	300	0.001	20
Whitecourt - Site C	330	0.004	61
TOTAL		0.104	3261
Loaded km travelled/yr		648328	

TABLE 4.7b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	124
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.012	464
Hwy 2: Jct 11 - Jct 12	16.6	0.002	613
Hwy 2: Jct 12 - Edmonton	108.6	0.041	2481
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.017	3135
Hwy 12: Jct12&50 - Sask border	246.3	0.000	126
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	201
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	201
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.006	126
Hwy 21: Jct 15 - Jct 16	13.7	0.000	165
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.8a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site C	450	0.002	19
Bowden - Site C	110	0.000	10
Calgary - Site C	210	0.031	873
Carseland - Site C	200	0.000	1
Coleman - Site C	450	0.004	47
Cochrane - Site C	230	0.000	3
Drayton Valley - Site C	180	0.002	40
Edmonton - Site C	160	0.038	1611
Edson - Site C	350	0.001	17
Ft. Mcmurray - Site C	570	0.002	17
Ft. Saskatchewan - Site C	190	0.003	123
Grande Prairie - Site C	600	0.006	46
Lacombe - Site C	40	0.000	1
Lethbridge - Site C	410	0.002	31
Lloydminster - Site C	390	0.001	17
Medicine Hat - Site C	400	0.009	100
Nisku - Site C	130	0.000	9
Red Deer - Site C	60	0.001	122
Redwater - Site C	220	0.001	34
Rocky Mtn House - Site C	130	0.000	27
Rosedale - Site C	170	0.000	1
Spruce Grove - Site C	180	0.000	6
Standard - Site C	200	0.001	24
Two Hills - Site C	300	0.001	20
Whitecourt - Site C	330	0.004	61
TOTAL		0.110	3260
Loaded km travelled/yr		672500	

TABLE 4.8b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	124
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.025	964
Hwy 2: Jct 11 - Jct 12	16.6	0.003	1113
Hwy 2: Jct 12 - Edmonton	108.6	0.033	1980
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.017	3134
Hwy 12: Jct12&50 - Sask border	246.3	0.000	126
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	179
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	179
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.006	126
Hwy 21: Jct 15 - Jct 16	13.7	0.000	143
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.9a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site C	450	0.002	19
Bowden - Site C	110	0.000	10
Calgary - Site C	210	0.047	1299
Carseland - Site C	200	0.000	1
Coleman - Site C	450	0.004	47
Cochrane - Site C	230	0.000	3
Drayton Valley - Site C	180	0.002	40
Edmonton - Site C	160	0.028	1214
Edson - Site C	350	0.001	17
Ft. Mcmurray - Site C	570	0.002	17
Ft. Saskatchewan - Site C	190	0.003	98
Grande Prairie - Site C	600	0.006	46
Lacombe - Site C	40	0.000	1
Lethbridge - Site C	410	0.002	31
Lloydminster - Site C	390	0.001	17
Medicine Hat - Site C	400	0.009	100
Nisku - Site C	130	0.000	9
Red Deer - Site C	60	0.001	122
Redwater - Site C	220	0.001	34
Rocky Mtn House - Site C	130	0.001	27
Rosedale - Site C	170	0.000	1
Spruce Grove - Site C	180	0.000	6
Standard - Site C	200	0.001	24
Two Hills - Site C	300	0.001	20
Whitecourt - Site C	330	0.004	61
TOTAL		0.116	3264
Loaded km travelled/yr		693718	

TABLE 4.9b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE C

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	124
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.036	1390
Hwy 2: Jct 11 - Jct 12	16.6	0.004	1539
Hwy 2: Jct 12 - Edmonton	108.6	0.026	1558
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.017	3138
Hwy 12: Jct12&50 - Sask border	246.3	0.000	126
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	154
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	154
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.006	126
Hwy 21: Jct 15 - Jct 16	13.7	0.000	118
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.10a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NC	590	0.002	19
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.001	373
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Drayton Valley - Site NC	320	0.003	40
Edmonton - Site NC	300	0.104	2090
Edson - Site NC	490	0.002	17
Ft. Mcmurray - Site NC	720	0.003	17
Ft. Saskatchewan - Site NC	330	0.008	145
Grande Prairie - Site NC	750	0.007	46
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	31
Lloydminster - Site NC	540	0.002	17
Medicine Hat - Site NC	310	0.005	100
Nisku - Site NC	280	0.000	9
Red Deer - Site NC	170	0.004	122
Redwater - Site NC	370	0.002	34
Rocky Mtn House - Site NC	240	0.001	27
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	6
Standard - Site NC	100	0.000	24
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	61
TOTAL		0.154	3261
Loaded km travelled/yr		928840	

TABLE 4.10b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.069	2681
Hwy 2: Jct 11 - Jct 12	16.6	0.007	2522
Hwy 2: Jct 12 - Edmonton	108.6	0.041	2481
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	201
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	201
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	165
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.11a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NC	590	0.002	19
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.002	873
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Drayton Valley - Site NC	320	0.003	40
Edmonton - Site NC	300	0.080	1611
Edson - Site NC	490	0.002	17
Ft. Mcmurray - Site NC	720	0.003	17
Ft. Saskatchewan - Site NC	330	0.006	123
Grande Prairie - Site NC	750	0.007	46
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	31
Lloydminster - Site NC	540	0.002	17
Medicine Hat - Site NC	310	0.005	100
Nisku - Site NC	280	0.000	9
Red Deer - Site NC	170	0.004	122
Redwater - Site NC	370	0.002	34
Rocky Mtn House - Site NC	240	0.001	27
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	6
Standard - Site NC	100	0.000	24
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	61
TOTAL		0.130	3260
Loaded km travelled/yr		780966	

TABLE 4.11b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.056	2180
Hwy 2: Jct 11 - Jct 12	16.6	0.006	2021
Hwy 2: Jct 12 - Edmonton	108.6	0.033	1980
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	179
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	179
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	143
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.12a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NC	590	0.002	19
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.002	1299
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Drayton Valley - Site NC	320	0.003	40
Edmonton - Site NC	300	0.060	1214
Edson - Site NC	490	0.002	17
Ft. Mcmurray - Site NC	720	0.003	17
Ft. Saskatchewan - Site NC	330	0.005	98
Grande Prairie - Site NC	750	0.007	46
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	31
Lloydminster - Site NC	540	0.002	17
Medicine Hat - Site NC	310	0.005	100
Nisku - Site NC	280	0.000	9
Red Deer - Site NC	170	0.004	122
Redwater - Site NC	370	0.002	34
Rocky Mtn House - Site NC	240	0.001	27
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	6
Standard - Site NC	100	0.000	24
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	61
TOTAL		0.109	3264
Loaded km travelled/yr		656307	

TABLE 4.12b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.045	1758
Hwy 2: Jct 11 - Jct 12	16.6	0.004	1599
Hwy 2: Jct 12 - Edmonton	108.6	0.026	1558
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	154
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	154
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	118
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.13a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site SI	820	0.003	19
Bowden - Site SI	340	0.001	10
Calgary - Site SI	250	0.016	373
Carseland - Site SI	220	0.000	1
Coleman - Site SI	320	0.003	47
Cochrane - Site SI	280	0.000	3
Drayton Valley - Site SI	550	0.004	40
Edmonton - Site SI	530	0.189	2090
Edson - Site SI	720	0.002	17
Ft. Mcmurray - Site SI	940	0.003	17
Ft. Saskatchewan - Site SI	560	0.014	145
Grande Prairie - Site SI	970	0.009	46
Lacombe - Site SI	410	0.000	1
Lethbridge - Site SI	190	0.001	31
Lloydminster - Site SI	760	0.002	17
Medicine Hat - Site SI	40	0.000	100
Nisku - Site SI	500	0.001	9
Red Deer - Site SI	390	0.009	122
Redwater - Site SI	590	0.004	34
Rocky Mtn House - Site SI	460	0.002	27
Rosedale - Site SI	270	0.000	1
Spruce Grove - Site SI	550	0.001	6
Standard - Site SI	190	0.001	24
Two Hills - Site SI	670	0.002	20
Whitecourt - Site SI	700	0.008	61
TOTAL		0.274	3261
Loaded km travelled/yr		1593826	

TABLE 4.13b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.023	3059
Hwy 1: Jct 561 - Jct 884	177.7	0.107	3083
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.069	2681
Hwy 2: Jct 11 - Jct 12	16.6	0.007	2522
Hwy 2: Jct 12 - Edmonton	108.6	0.041	2481
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	201
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	201
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	165
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.14a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site SI	820	0.003	19
Bowden - Site SI	340	0.001	10
Calgary - Site SI	250	0.038	873
Carseland - Site SI	220	0.000	1
Coleman - Site SI	320	0.003	47
Cochrane - Site SI	280	0.000	3
Drayton Valley - Site SI	550	0.004	40
Edmonton - Site SI	530	0.145	1611
Edson - Site SI	720	0.002	17
Ft. Mcmurray - Site SI	940	0.003	17
Ft. Saskatchewan - Site SI	560	0.011	123
Grande Prairie - Site SI	970	0.009	46
Lacombe - Site SI	410	0.000	1
Lethbridge - Site SI	190	0.001	31
Lloydminster - Site SI	760	0.002	17
Medicine Hat - Site SI	40	0.000	100
Nisku - Site SI	500	0.001	9
Red Deer - Site SI	390	0.009	122
Redwater - Site SI	590	0.004	34
Rocky Mtn House - Site SI	460	0.002	27
Rosedale - Site SI	270	0.000	1
Spruce Grove - Site SI	550	0.001	6
Standard - Site SI	190	0.001	24
Two Hills - Site SI	670	0.002	20
Whitecourt - Site SI	700	0.008	61
TOTAL		0.251	3260
Loaded km travelled/yr		1453229	

TABLE 4.14b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.023	3058
Hwy 1: Jct 561 - Jct 884	177.7	0.107	3082
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.056	2180
Hwy 2: Jct 11 - Jct 12	16.6	0.006	2021
Hwy 2: Jct 12 - Edmonton	108.6	0.033	1980
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	179
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	179
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	143
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.15a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site SI	820	0.003	19
Bowden - Site SI	340	0.001	10
Calgary - Site SI	250	0.057	1299
Carseland - Site SI	220	0.000	1
Coleman - Site SI	320	0.003	47
Cochrane - Site SI	280	0.000	3
Drayton Valley - Site SI	550	0.004	40
Edmonton - Site SI	530	0.110	1214
Edson - Site SI	720	0.002	17
Ft. Mcmurray - Site SI	940	0.003	17
Ft. Saskatchewan - Site SI	560	0.009	98
Grande Prairie - Site SI	970	0.009	46
Lacombe - Site SI	410	0.000	1
Lethbridge - Site SI	190	0.001	31
Lloydminster - Site SI	760	0.002	17
Medicine Hat - Site SI	40	0.000	100
Nisku - Site SI	500	0.001	9
Red Deer - Site SI	390	0.009	122
Redwater - Site SI	590	0.004	34
Rocky Mtn House - Site SI	460	0.002	27
Rosedale - Site SI	270	0.000	1
Spruce Grove - Site SI	550	0.001	6
Standard - Site SI	190	0.001	24
Two Hills - Site SI	670	0.002	20
Whitecourt - Site SI	700	0.008	61
TOTAL		0.231	3264
Loaded km travelled/yr		1335851	

TABLE 4.15b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.023	3062
Hwy 1: Jct 561 - Jct 884	177.7	0.107	3086
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.045	1758
Hwy 2: Jct 11 - Jct 12	16.6	0.004	1599
Hwy 2: Jct 12 - Edmonton	108.6	0.026	1558
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	154
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	154
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	118
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.16a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	19
Drayton Valley - Site NI	260	0.003	40
Edmonton - Site NI	130	0.081	2090
Edson - Site NI	320	0.001	17
Ft. Mcmurray - Site NI	390	0.001	17
Ft. Saskatchewan - Site NI	120	0.006	145
Grande Prairie - Site NI	600	0.007	46
Lacombe - Site NI	260	0.000	1
Lloydminster - Site NI	230	0.001	17
Nisku - Site NI	160	0.000	9
Red Deer - Site NI	280	0.007	122
Redwater - Site NI	70	0.001	34
Rocky Mtn House - Site NI	340	0.002	27
Spruce Grove - Site NI	150	0.000	6
Two Hills - Site NI	100	0.001	20
Whitecourt - Site NI	300	0.005	61
Bowden - Site SI	340	0.001	10
Calgary - Site SI	250	0.016	373
Carseland - Site SI	220	0.000	1
Coleman - Site SI	320	0.003	47
Cochrane - Site SI	280	0.000	3
Lethbridge - Site SI	190	0.001	31
Medicine Hat - Site SI	40	0.000	100
Rosedale - Site SI	270	0.000	1
Standard - Site SI	190	0.001	24
TOTAL		0.138	3261
Loaded km travelled/yr		556287	

TABLE 4.16b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.003	388
Hwy 1: Jct 561 - Jct 884	177.7	0.014	412
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	145
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.070	2552
Hwy 28: Jct 63 - Jct 857	59.3	0.025	2615
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.17a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	19
Drayton Valley - Site NI	260	0.003	40
Edmonton - Site NI	130	0.062	1611
Edson - Site NI	320	0.001	17
Ft. Mcmurray - Site NI	390	0.001	17
Ft. Saskatchewan - Site NI	120	0.005	123
Grande Prairie - Site NI	600	0.007	46
Lacombe - Site NI	260	0.000	1
Lloydminster - Site NI	230	0.001	17
Nisku - Site NI	160	0.000	9
Red Deer - Site NI	280	0.007	122
Redwater - Site NI	70	0.000	34
Rocky Mtn House - Site NI	340	0.002	27
Spruce Grove - Site NI	150	0.000	6
Two Hills - Site NI	100	0.001	20
Whitecourt - Site NI	300	0.005	61
Bowden - Site SI	340	0.001	10
Calgary - Site SI	250	0.038	873
Carseland - Site SI	220	0.000	1
Coleman - Site SI	320	0.003	47
Cochrane - Site SI	280	0.000	3
Lethbridge - Site SI	190	0.001	31
Medicine Hat - Site SI	40	0.000	100
Rosedale - Site SI	270	0.000	1
Standard - Site SI	190	0.001	24
TOTAL		0.141	3260
Loaded km travelled/yr		615660	

TABLE 4.17b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.007	888
Hwy 1: Jct 561 - Jct 884	177.7	0.032	912
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	123
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.056	2051
Hwy 28: Jct 63 - Jct 857	59.3	0.020	2114
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.18a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

ROUTE		LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville	- Site NI	100	0.000	19
Drayton Valley	- Site NI	260	0.003	40
Edmonton	- Site NI	130	0.047	1214
Edson	- Site NI	320	0.001	17
Ft. Mcmurray	- Site NI	390	0.001	17
Ft. Saskatchewan	- Site NI	120	0.004	98
Grande Prairie	- Site NI	600	0.007	46
Lacombe	- Site NI	260	0.000	1
Lloydminster	- Site NI	230	0.001	17
Nisku	- Site NI	160	0.000	9
Red Deer	- Site NI	280	0.007	122
Redwater	- Site NI	70	0.001	34
Rocky Mtn House	- Site NI	340	0.002	27
Spruce Grove	- Site NI	150	0.000	6
Two Hills	- Site NI	100	0.001	20
Whitecourt	- Site NI	300	0.005	61
Bowden	- Site SI	340	0.001	10
Calgary	- Site SI	250	0.057	1299
Carseland	- Site SI	220	0.000	1
Coleman	- Site SI	320	0.003	47
Cochrane	- Site SI	280	0.000	3
Lethbridge	- Site SI	190	0.001	31
Medicine Hat	- Site SI	40	0.000	100
Rosedale	- Site SI	270	0.000	1
Standard	- Site SI	190	0.001	24
TOTAL			0.143	3264
Loaded km travelled/yr			666989	

TABLE 4.18b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NI AND SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	3
Hwy 1: Calgary - Jct 561	62.0	0.010	1314
Hwy 1: Jct 561 - Jct 884	177.7	0.046	1338
Hwy 1: Jct 884 - Med Hat	34.6	0.001	178
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.002	78
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	98
Hwy 16: Lloyd - Jct 21	219.5	0.000	17
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.000	84
Hwy 18: Jct 44 - Jct 63	53.0	0.000	46
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 22: Jct 1A - Jct 1	12.4	0.000	3
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.044	1629
Hwy 28: Jct 63 - Jct 857	59.3	0.016	1692
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	56
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.005	46
Hwy 36&28: Jct 45 - Jct 28	56.1	0.000	20
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	17
Hwy 43: Whitecourt - Jct 16	129.2	0.002	61
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	63

TABLE 4.19a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.016	2090
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.000	145
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	17
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Spruce Grove - Site NE	80	0.000	6
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.001	373
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Lethbridge - Site NC	210	0.001	31
Medicine Hat - Site NC	310	0.005	100
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	24
TOTAL		0.046	3261
Loaded km travelled/yr		285443	

TABLE 4.19b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	199
Hwy 15: Fort Sask - Jct 45	20.3	0.009	2564
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2419
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2220
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2419
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2581
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.20a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.012	1611
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.000	123
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	17
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Spruce Grove - Site NE	80	0.000	6
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.002	873
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Lethbridge - Site NC	210	0.001	31
Medicine Hat - Site NC	310	0.005	100
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	24
TOTAL		0.043	3260
Loaded km travelled/yr		264443	

TABLE 4.20b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	199
Hwy 15: Fort Sask - Jct 45	20.3	0.008	2063
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1940
Hwy 16: Jct 16A - Edmtn	7.0	0.003	1741
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1940
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2080
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.21a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	19
Drayton Valley - Site NE	170	0.002	40
Edmonton - Site NE	50	0.009	1214
Edson - Site NE	250	0.001	17
Ft. Mcmurray - Site NE	380	0.002	17
Ft. Saskatchewan - Site NE	20	0.000	98
Grande Prairie - Site NE	500	0.005	46
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	17
Nisku - Site NE	70	0.000	9
Red Deer - Site NE	190	0.003	122
Redwater - Site NE	30	0.000	34
Rocky Mtn House - Site NE	260	0.001	27
Spruce Grove - Site NE	80	0.000	6
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	61
Bowden - Site NC	110	0.000	10
Calgary - Site NC	10	0.002	1299
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	47
Cochrane - Site NC	50	0.000	3
Lethbridge - Site NC	210	0.001	31
Medicine Hat - Site NC	310	0.005	100
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	24
TOTAL		0.040	3264
Loaded km travelled/yr		247070	

TABLE 4.21b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL WASTE TYPES TREATED AT SITES NE AND NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.003	199
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	199
Hwy 15: Fort Sask - Jct 45	20.3	0.006	1641
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1543
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1344
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1543
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	36
Hwy 28: Jct 63 - Jct 857	59.3	0.000	19
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	70
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	1658
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.22a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

ROUTE		LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville	- Site NI	100	0.000	19
Ft. Mcmurray	- Site NI	390	0.001	17
Drayton Valley	- Site NE	170	0.002	40
Edmonton	- Site NE	50	0.016	2090
Edson	- Site NE	250	0.001	17
Ft. Saskatchewan	- Site NE	20	0.001	145
Grande Prairie	- Site NE	500	0.005	46
Lloydminster	- Site NE	200	0.001	17
Nisku	- Site NE	70	0.000	9
Redwater	- Site NE	30	0.000	34
Spruce Grove	- Site NE	80	0.000	6
Two Hills	- Site NE	90	0.000	20
Whitecourt	- Site NE	230	0.003	61
Lacombe	- Site C	40	0.000	1
Red Deer	- Site C	60	0.001	122
Rocky Mtn House	- Site C	130	0.001	27
Bowden	- Site NC	110	0.000	10
Calgary	- Site NC	10	0.001	373
Carseland	- Site NC	90	0.000	1
Coleman	- Site NC	240	0.002	47
Cochrane	- Site NC	50	0.000	3
Rosedale	- Site NC	150	0.000	1
Standard	- Site NC	100	0.000	24
Lethbridge	- Site SI	190	0.001	31
Medicine Hat	- Site SI	40	0.000	100
TOTAL			0.037	3261
Loaded km travelled/yr			236472	

TABLE 4.22b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	26
Hwy 1: Jct 884 - Med Hat	34.6	0.000	131
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.001	47
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.000	49
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.001	31
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.001	150
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	49
Hwy 15: Fort Sask - Jct 45	20.3	0.009	2414
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2269
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2220
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2269
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 28: Jct 63 - Jct 857	59.3	0.000	17
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.000	34
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	2431
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.23a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

ROUTE		LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville	- Site NI	100	0.000	19
Ft. Mcmurray	- Site NI	390	0.001	17
Drayton Valley	- Site NE	170	0.002	40
Edmonton	- Site NE	50	0.012	1611
Edson	- Site NE	250	0.001	17
Ft. Saskatchewan	- Site NE	20	0.000	123
Grande Prairie	- Site NE	500	0.005	46
Lloydminster	- Site NE	200	0.001	17
Nisku	- Site NE	70	0.000	9
Redwater	- Site NE	30	0.000	34
Spruce Grove	- Site NE	80	0.000	6
Two Hills	- Site NE	90	0.000	20
Whitecourt	- Site NE	230	0.003	61
Lacombe	- Site C	40	0.000	1
Red Deer	- Site C	60	0.001	122
Rocky Mtn House	- Site C	130	0.001	27
Bowden	- Site NC	110	0.000	10
Calgary	- Site NC	10	0.002	873
Carseland	- Site NC	90	0.000	1
Coleman	- Site NC	240	0.002	47
Cochrane	- Site NC	50	0.000	3
Rosedale	- Site NC	150	0.000	1
Standard	- Site NC	100	0.000	24
Lethbridge	- Site SI	190	0.001	31
Medicine Hat	- Site SI	40	0.000	100
TOTAL			0.034	3260
Loaded km travelled/yr			215472	

TABLE 4.23b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (II)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	26
Hwy 1: Jct 884 - Med Hat	34.6	0.000	131
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.001	47
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.000	49
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.001	31
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.001	150
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	49
Hwy 15: Fort Sask - Jct 45	20.3	0.007	1913
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1790
Hwy 16: Jct 16A - Edmtn	7.0	0.003	1741
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1790
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 28: Jct 63 - Jct 857	59.3	0.000	17
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.000	34
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	1930
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.24a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

ROUTE		LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville	- Site NI	100	0.000	19
Ft. Mcmurray	- Site NI	390	0.001	17
Drayton Valley	- Site NE	170	0.002	40
Edmonton	- Site NE	50	0.009	1214
Edson	- Site NE	250	0.001	17
Ft. Saskatchewan	- Site NE	20	0.000	98
Grande Prairie	- Site NE	500	0.005	46
Lloydminster	- Site NE	200	0.001	17
Nisku	- Site NE	70	0.000	9
Redwater	- Site NE	30	0.000	34
Spruce Grove	- Site NE	80	0.000	6
Two Hills	- Site NE	90	0.000	20
Whitecourt	- Site NE	230	0.003	61
Lacombe	- Site C	40	0.000	1
Red Deer	- Site C	60	0.001	122
Rocky Mtn House	- Site C	130	0.000	27
Bowden	- Site NC	110	0.000	10
Calgary	- Site NC	10	0.002	1299
Carseland	- Site NC	90	0.000	1
Coleman	- Site NC	240	0.002	47
Cochrane	- Site NC	50	0.000	3
Rosedale	- Site NC	150	0.000	1
Standard	- Site NC	100	0.000	24
Lethbridge	- Site SI	190	0.001	31
Medicine Hat	- Site SI	40	0.000	100
TOTAL			0.032	3264
Loaded km travelled/yr			198099	

TABLE 4.24b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: ALL TYPES TREATED AT SITE NI, SITE NE, SITE C, SITE NC, AND SITE SI

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.000	26
Hwy 1: Jct 884 - Med Hat	34.6	0.000	131
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.001	47
Hwy 2: Calgary - Int 11	140.1	0.000	10
Hwy 2: Jct 11 - Jct 12	16.6	0.000	149
Hwy 2: Jct 12 - Edmonton	108.6	0.000	49
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.001	31
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.001	150
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	49
Hwy 15: Fort Sask - Jct 45	20.3	0.005	1491
Hwy 15: Jct 16 - Jct 45	45.1	0.000	17
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1393
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1344
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1393
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 28: Jct 63 - Jct 857	59.3	0.000	17
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.000	34
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	1508
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.25a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.006	71
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.005	118
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	17
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NE	210	0.001	15
Bowden - Site NE	240	0.000	9
Calgary - Site NE	340	0.017	302
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	46
Cochrane - Site NE	360	0.000	2
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.015	1972
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	128
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.002	19
Lloydminster - Site NE	200	0.001	13
Medicine Hat - Site NE	620	0.010	96
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	3
Standard - Site NE	420	0.001	23
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
TOTAL		0.084	3261
Loaded km travelled/yr		496870	

TABLE 4.25b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.015	589
Hwy 2: Jct 11 - Jct 12	16.6	0.002	738
Hwy 2: Jct 12 - Edmonton	108.6	0.012	789
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.001	680
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	17
Hwy 15: Fort Sask - Jct 45	20.3	0.011	2896
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2768
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2088
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2768
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.007	284
Hwy 28: Jct 63 - Jct 857	59.3	0.003	280
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	23
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2909
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.26a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.009	101
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.004	92
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	16
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NE	210	0.001	15
Bowden - Site NE	240	0.000	9
Calgary - Site NE	340	0.066	1198
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	46
Cochrane - Site NE	360	0.000	2
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.009	1122
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	82
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.002	19
Lloydminster - Site NE	200	0.001	13
Medicine Hat - Site NE	620	0.010	96
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	3
Standard - Site NE	420	0.001	23
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
TOTAL		0.128	3264
Loaded km travelled/yr		763220	

TABLE 4.26b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	125
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.039	1515
Hwy 2: Jct 11 - Jct 12	16.6	0.005	1664
Hwy 2: Jct 12 - Edmonton	108.6	0.028	1715
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.003	1576
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	16
Hwy 15: Fort Sask - Jct 45	20.3	0.011	2896
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2814
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1238
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2814
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.007	287
Hwy 28: Jct 63 - Jct 857	59.3	0.003	283
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	23
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Bray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2909
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.27a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NI	230	0.000	12
Saskatchewan N - Site NI	230	0.000	8
Saskatchewan S - Site NI	230	0.000	8
Manitoba - Site NE	200	0.012	223
Saskatchewan N - Site NE	200	0.005	91
Saskatchewan S - Site NE	200	0.005	91
TOTAL		0.023	433
Loaded km travelled/yr		90357	

TABLE 4.27b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 15: Jct 16 - Jct 45	45.1	0.006	405
Hwy 16: Lloyd - Jct 21	219.5	0.016	433
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	28
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	28
Hwy 45: Jct 15 - Jct 36	96.8	0.000	405

TABLE 4.28a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.006	71
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.005	118
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	17
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NC	590	0.002	15
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.001	302
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Drayton Valley - Site NC	320	0.003	39
Edmonton - Site NC	300	0.098	1972
Edson - Site NC	490	0.001	13
Ft. Mcmurray - Site NC	720	0.002	13
Ft. Saskatchewan - Site NC	330	0.007	128
Grande Prairie - Site NC	750	0.006	41
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	19
Lloydminster - Site NC	540	0.001	13
Medicine Hat - Site NC	310	0.005	96
Nisku - Site NC	280	0.000	1
Red Deer - Site NC	170	0.003	114
Redwater - Site NC	370	0.002	31
Rocky Mtn House - Site NC	240	0.001	26
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	3
Standard - Site NC	100	0.000	23
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	59
TOTAL		0.159	3261
Loaded km travelled/yr		934336	

TABLE 4.28b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.067	2588
Hwy 2: Jct 11 - Jct 12	16.6	0.007	2449
Hwy 2: Jct 12 - Edmonton	108.6	0.040	2417
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	39
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	176
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	17
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	28
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	176
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	148
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.008	297
Hwy 28: Jct 63 - Jct 857	59.3	0.003	265
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.000	1
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.29a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.009	101
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.004	92
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	16
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NC	590	0.002	15
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.002	1198
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Drayton Valley - Site NC	320	0.003	39
Edmonton - Site NC	300	0.056	1122
Edson - Site NC	490	0.001	13
Ft. Mcmurray - Site NC	720	0.002	13
Ft. Saskatchewan - Site NC	330	0.004	82
Grande Prairie - Site NC	750	0.006	41
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	19
Lloydminster - Site NC	540	0.001	13
Medicine Hat - Site NC	310	0.005	96
Nisku - Site NC	280	0.000	1
Red Deer - Site NC	170	0.003	114
Redwater - Site NC	370	0.002	31
Rocky Mtn House - Site NC	240	0.001	26
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	3
Standard - Site NC	100	0.000	23
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	59
TOTAL		0.118	3264
Loaded km travelled/yr		679015	

TABLE 4.29b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.044	1722
Hwy 2: Jct 11 - Jct 12	16.6	0.004	1583
Hwy 2: Jct 12 - Edmonton	108.6	0.025	1551
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	39
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	130
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	16
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	28
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	130
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	102
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.008	300
Hwy 28: Jct 63 - Jct 857	59.3	0.003	268
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.000	1
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.30a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NI	230	0.001	12
Saskatchewan N - Site NI	230	0.000	8
Saskatchewan S - Site NI	230	0.000	8
Manitoba - Site NC	360	0.013	223
Saskatchewan N - Site NC	370	0.008	91
Saskatchewan S - Site NC	360	0.005	91
TOTAL		0.028	433
Loaded km travelled/yr		154169	

TABLE 4.30b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.003	405
Hwy 1: Jct 561 - Jct 884	177.7	0.011	314
Hwy 1: Jct 884 - Med Hat	34.6	0.001	314
Hwy 1: Med Hat - Sask border	48.5	0.003	314
Hwy 9: Sask border - Jct 21	259.9	0.006	91
Hwy 16: Lloyd - Jct 21	219.5	0.000	28
Hwy 21: Jct 1 - Jct 50	169.8	0.001	91
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	28
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	28

TABLE 4.31a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.006	71
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.005	118
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	17
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NE	210	0.001	15
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.015	1972
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	128
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	13
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Spruce Grove - Site NE	80	0.000	3
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.001	302
Carseland - Site NC	90	0.000	4
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Lethbridge - Site NC	210	0.001	19
Medicine Hat - Site NC	310	0.005	96
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	23
TOTAL		0.058	3261
Loaded km travelled/yr		336182	

TABLE 4.31b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.002	99
Hwy 2: Jct 11 - Jct 12	16.6	0.001	240
Hwy 2: Jct 12 - Edmonton	108.6	0.004	290
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	181
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	17
Hwy 15: Fort Sask - Jct 45	20.3	0.009	2397
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2269
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2088
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2269
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.007	284
Hwy 28: Jct 63 - Jct 857	59.3	0.003	280
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	23
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Bray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2410
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.32a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NI	100	0.000	4
Bowden - Site NI	320	0.000	1
Calgary - Site NI	430	0.009	101
Coleman - Site NI	660	0.000	1
Cochrane - Site NI	450	0.000	1
Drayton Valley - Site NI	260	0.000	1
Edmonton - Site NI	130	0.004	92
Edson - Site NI	320	0.000	4
Ft. Mcmurray - Site NI	390	0.000	4
Ft. Saskatchewan - Site NI	120	0.001	16
Grande Prairie - Site NI	600	0.001	5
Lethbridge - Site NI	630	0.001	12
Lloydminster - Site NI	230	0.000	4
Medicine Hat - Site NI	710	0.001	4
Nisku - Site NI	160	0.000	8
Red Deer - Site NI	280	0.000	8
Redwater - Site NI	70	0.000	3
Rocky Mtn House - Site NI	340	0.000	1
Spruce Grove - Site NI	150	0.000	3
Standard - Site NI	500	0.000	1
Whitecourt - Site NI	300	0.000	2
Bonnyville - Site NE	210	0.001	15
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.009	1122
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	82
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	13
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Spruce Grove - Site NE	80	0.000	3
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.002	1198
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Lethbridge - Site NC	210	0.001	19
Medicine Hat - Site NC	310	0.005	96
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	23
TOTAL		0.055	3264
Loaded km travelled/yr		308195	

TABLE 4.32b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	126
Hwy 1: Jct 561 - Jct 884	177.7	0.003	100
Hwy 1: Jct 884 - Med Hat	34.6	0.000	100
Hwy 1A: Jct 22 - Calgary	19.8	0.000	3
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	78
Hwy 2: Calgary - Int 11	140.1	0.003	129
Hwy 2: Jct 11 - Jct 12	16.6	0.001	270
Hwy 2: Jct 12 - Edmonton	108.6	0.005	320
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	181
Hwy 15: Jct 37 - Fort Sask	7.4	0.000	16
Hwy 15: Fort Sask - Jct 45	20.3	0.005	1501
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	17
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1419
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1238
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	125
Hwy 18: Jct 44 - Jct 63	53.0	0.000	5
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1419
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.007	287
Hwy 28: Jct 63 - Jct 857	59.3	0.003	283
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	23
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 34,2,44: Jct 43 - Jct 18	364.4	0.001	5
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	41
Hwy 43: Whitecourt - Jct 16	129.2	0.003	102
Hwy 45: Jct 15 - Jct 36	96.8	0.001	1514
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	22

TABLE 4.33a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NI	230	0.000	12
Saskatchewan N - Site NI	230	0.000	8
Saskatchewan S - Site NI	230	0.000	8
Manitoba - Site NE	200	0.012	223
Saskatchewan N - Site NE	200	0.005	91
Saskatchewan S - Site NC	360	0.005	91
TOTAL		0.023	433
Loaded km travelled/yr		104381	

TABLE 4.33b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE NI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	91
Hwy 1: Jct 561 - Jct 884	177.7	0.003	91
Hwy 1: Jct 884 - Med Hat	34.6	0.000	91
Hwy 1: Med Hat - Sask border	48.5	0.001	91
Hwy 15: Jct 16 - Jct 45	45.1	0.004	314
Hwy 16: Lloyd - Jct 21	219.5	0.012	342
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.001	28
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	28
Hwy 45: Jct 15 - Jct 36	96.8	0.000	314

TABLE 4.34a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	15
Bowden - Site NE	240	0.000	9
Calgary - Site NE	340	0.017	302
Carseland - Site NE	400	0.000	1
Coleman - Site NE	580	0.005	46
Cochrane - Site NE	360	0.000	2
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.015	1972
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	128
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lethbridge - Site NE	540	0.002	19
Lloydminster - Site NE	200	0.001	13
Medicine Hat - Site NE	620	0.010	96
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Rosedale - Site NE	370	0.000	1
Spruce Grove - Site NE	80	0.000	3
Standard - Site NE	420	0.001	23
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
Bonnyville - Site SI	820	0.001	4
Bowden - Site SI	340	0.000	1
Calgary - Site SI	250	0.003	71
Coleman - Site SI	320	0.000	1
Cochrane - Site SI	280	0.000	1
Drayton Valley - Site SI	550	0.000	1
Edmonton - Site SI	530	0.011	118
Edson - Site SI	720	0.000	4
Ft. Mcmurray - Site SI	940	0.001	4
Ft. Saskatchewan - Site SI	560	0.002	17
Grande Prairie - Site SI	970	0.001	5
Lethbridge - Site SI	190	0.000	12
Lloydminster - Site SI	760	0.001	4
Medicine Hat - Site SI	40	0.000	4
Nisku - Site SI	500	0.001	8
Red Deer - Site SI	390	0.001	8
Redwater - Site SI	590	0.000	3
Rocky Mtn House - Site SI	460	0.000	1
Spruce Grove - Site SI	550	0.000	3
Standard - Site SI	190	0.000	1
Whitecourt - Site SI	700	0.000	2
TOTAL		0.089	3261
Loaded km travelled/yr		548119	

TABLE 4.34b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	1
Hwy 1: Calgary - Jct 561	62.0	0.003	375
Hwy 1: Jct 561 - Jct 884	177.7	0.012	352
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calgary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	65
Hwy 2: Calgary - Int 11	140.1	0.017	680
Hwy 2: Jct 11 - Jct 12	16.6	0.002	811
Hwy 2: Jct 12 - Edmonton	108.6	0.013	851
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.000	1
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.001	705
Hwy 15: Fort Sask - Jct 45	20.3	0.011	2896
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	21
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2793
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2088
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2785
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	32
Hwy 28: Jct 63 - Jct 857	59.3	0.000	15
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	39
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2909
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.35a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

ROUTE		LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville	- Site NE	210	0.001	15
Bowden	- Site NE	240	0.000	9
Calgary	- Site NE	340	0.066	1198
Carseland	- Site NE	400	0.000	1
Coleman	- Site NE	580	0.005	46
Cochrane	- Site NE	360	0.000	2
Drayton Valley	- Site NE	170	0.001	39
Edmonton	- Site NE	50	0.009	1122
Edson	- Site NE	250	0.001	13
Ft. Mcmurray	- Site NE	380	0.001	13
Ft. Saskatchewan	- Site NE	20	0.000	82
Grande Prairie	- Site NE	500	0.005	41
Lacombe	- Site NE	170	0.000	1
Lethbridge	- Site NE	540	0.002	19
Lloydminster	- Site NE	200	0.001	13
Medicine Hat	- Site NE	620	0.010	96
Nisku	- Site NE	70	0.000	1
Red Deer	- Site NE	190	0.003	114
Redwater	- Site NE	30	0.000	31
Rocky Mtn House	- Site NE	260	0.001	26
Rosedale	- Site NE	370	0.000	1
Spruce Grove	- Site NE	80	0.000	3
Standard	- Site NE	420	0.001	23
Two Hills	- Site NE	90	0.000	20
Whitecourt	- Site NE	230	0.003	59
Bonnyville	- Site SI	820	0.001	4
Bowden	- Site SI	340	0.000	1
Calgary	- Site SI	250	0.004	101
Coleman	- Site SI	320	0.000	1
Cochrane	- Site SI	280	0.000	1
Drayton Valley	- Site SI	550	0.000	1
Edmonton	- Site SI	530	0.008	92
Edson	- Site SI	720	0.001	4
Ft. Mcmurray	- Site SI	940	0.001	4
Ft. Saskatchewan	- Site SI	560	0.001	16
Grande Prairie	- Site SI	970	0.001	5
Lethbridge	- Site SI	190	0.000	12
Lloydminster	- Site SI	760	0.001	4
Medicine Hat	- Site SI	40	0.000	4
Nisku	- Site SI	500	0.001	8
Red Deer	- Site SI	390	0.001	8
Redwater	- Site SI	590	0.000	3
Rocky Mtn House	- Site SI	460	0.000	1
Spruce Grove	- Site SI	550	0.000	3
Standard	- Site SI	190	0.000	1
Whitecourt	- Site SI	700	0.000	2
TOTAL			0.130	3264
Loaded km travelled/yr			798375	

TABLE 4.35b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calsary	18.8	0.000	1
Hwy 1: Calsary - Jct 561	62.0	0.003	378
Hwy 1: Jct 561 - Jct 884	177.7	0.012	355
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calsary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calsary	142.1	0.002	65
Hwy 2: Calsary - Int 11	140.1	0.040	1549
Hwy 2: Jct 11 - Jct 12	16.6	0.005	1680
Hwy 2: Jct 12 - Edmonton	108.6	0.028	1720
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.000	1
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	2
Hwy 12: Jct12&50 - Sask border	246.3	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.003	1600
Hwy 15: Fort Sask - Jct 45	20.3	0.011	2896
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	21
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2838
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1238
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2830
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	32
Hwy 28: Jct 63 - Jct 857	59.3	0.000	15
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	39
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2909
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.36a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NE	200	0.012	223
Saskatchewan N - Site NE	200	0.005	91
Saskatchewan S - Site NE	200	0.005	91
Manitoba - Site SI	90	0.000	12
Saskatchewan N - Site SI	90	0.000	8
Saskatchewan S - Site SI	90	0.000	8
TOTAL		0.021	433
Loaded km travelled/yr		86292	

TABLE 4.36b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT
SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 884 - Med Hat	34.6	0.000	28
Hwy 1: Med Hat - Sask border	48.5	0.000	28
Hwy 15: Jct 16 - Jct 45	45.1	0.006	405
Hwy 16: Lloyd - Jct 21	219.5	0.015	405
Hwy 45: Jct 15 - Jct 36	96.8	0.000	405

TABLE 4.37a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NC	590	0.002	15
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.001	302
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Drayton Valley - Site NC	320	0.003	39
Edmonton - Site NC	300	0.098	1972
Edson - Site NC	490	0.001	13
Ft. Mcmurray - Site NC	720	0.002	13
Ft. Saskatchewan - Site NC	330	0.007	128
Grande Prairie - Site NC	750	0.006	41
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	19
Lloydminster - Site NC	540	0.001	13
Medicine Hat - Site NC	310	0.005	96
Nisku - Site NC	280	0.000	1
Red Deer - Site NC	170	0.003	114
Redwater - Site NC	370	0.002	31
Rocky Mtn House - Site NC	240	0.001	26
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	3
Standard - Site NC	100	0.000	23
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	59
Bonnyville - Site SI	820	0.001	4
Bowden - Site SI	340	0.000	1
Calgary - Site SI	250	0.003	71
Coleman - Site SI	320	0.000	1
Cochrane - Site SI	280	0.000	1
Drayton Valley - Site SI	550	0.000	1
Edmonton - Site SI	530	0.011	118
Edson - Site SI	720	0.001	4
Ft. Mcmurray - Site SI	940	0.001	4
Ft. Saskatchewan - Site SI	560	0.002	17
Grande Prairie - Site SI	970	0.001	5
Lethbridge - Site SI	190	0.000	12
Lloydminster - Site SI	760	0.001	4
Medicine Hat - Site SI	40	0.000	4
Nisku - Site SI	500	0.001	8
Red Deer - Site SI	390	0.001	8
Redwater - Site SI	590	0.000	3
Rocky Mtn House - Site SI	460	0.000	1
Spruce Grove - Site SI	550	0.000	3
Standard - Site SI	190	0.000	1
Whitecourt - Site SI	700	0.000	2
TOTAL		0.164	3261
Loaded km travelled/yr		985585	

TABLE 4.37b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	1
Hwy 1: Calgary - Jct 561	62.0	0.003	376
Hwy 1: Jct 561 - Jct 884	177.7	0.012	352
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calgary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	65
Hwy 2: Calgary - Int 11	140.1	0.069	2681
Hwy 2: Jct 11 - Jct 12	16.6	0.007	2522
Hwy 2: Jct 12 - Edmonton	108.6	0.041	2481
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	201
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	201
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	165
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.38a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NC	590	0.002	15
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.002	1198
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Drayton Valley - Site NC	320	0.003	39
Edmonton - Site NC	300	0.056	1122
Edson - Site NC	490	0.001	13
Ft. Mcmurray - Site NC	720	0.002	13
Ft. Saskatchewan - Site NC	330	0.004	82
Grande Prairie - Site NC	750	0.006	41
Lacombe - Site NC	180	0.000	1
Lethbridge - Site NC	210	0.001	19
Lloydminster - Site NC	540	0.001	13
Medicine Hat - Site NC	310	0.005	96
Nisku - Site NC	280	0.000	1
Red Deer - Site NC	170	0.003	114
Redwater - Site NC	370	0.002	31
Rocky Mtn House - Site NC	240	0.001	26
Rosedale - Site NC	150	0.000	1
Spruce Grove - Site NC	330	0.000	3
Standard - Site NC	100	0.000	23
Two Hills - Site NC	450	0.001	20
Whitecourt - Site NC	480	0.005	59
Bonnyville - Site SI	820	0.001	4
Bowden - Site SI	340	0.000	1
Calgary - Site SI	250	0.004	101
Coleman - Site SI	320	0.000	1
Cochrane - Site SI	280	0.000	1
Drayton Valley - Site SI	550	0.000	1
Edmonton - Site SI	530	0.008	92
Edson - Site SI	720	0.001	4
Ft. Mcmurray - Site SI	940	0.001	4
Ft. Saskatchewan - Site SI	560	0.001	16
Grande Prairie - Site SI	970	0.001	5
Lethbridge - Site SI	190	0.000	12
Lloydminster - Site SI	760	0.001	4
Medicine Hat - Site SI	40	0.000	4
Nisku - Site SI	500	0.001	8
Red Deer - Site SI	390	0.001	8
Redwater - Site SI	590	0.000	3
Rocky Mtn House - Site SI	460	0.000	1
Spruce Grove - Site SI	550	0.000	3
Standard - Site SI	190	0.000	1
Whitecourt - Site SI	700	0.000	2
TOTAL		0.120	3264
Loaded km travelled/yr		714170	

TABLE 4.38b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	1
Hwy 1: Calgary - Jct 561	62.0	0.003	379
Hwy 1: Jct 561 - Jct 884	177.7	0.012	355
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calgary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	65
Hwy 2: Calgary - Int 11	140.1	0.045	1758
Hwy 2: Jct 11 - Jct 12	16.6	0.004	1599
Hwy 2: Jct 12 - Edmonton	108.6	0.026	1558
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.001	40
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	154
Hwy 15: Fort Sask - Jct 45	20.3	0.000	20
Hwy 16: Lloyd - Jct 21	219.5	0.001	36
Hwy 16: Jct 21 - Jct 16A	2.0	0.000	154
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	118
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.001	51
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 41&28: Jct 16 - Jct 28	93.7	0.001	19
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.000	20
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.39a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NC	360	0.013	223
Saskatchewan N - Site NC	370	0.008	91
Saskatchewan S - Site NC	360	0.005	91
Manitoba - Site SI	90	0.000	12
Saskatchewan N - Site SI	90	0.000	8
Saskatchewan S - Site SI	90	0.000	8
TOTAL		0.027	433
Loaded km travelled/yr		150104	

TABLE 4.39b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.003	405
Hwy 1: Jct 561 - Jct 884	177.7	0.011	314
Hwy 1: Jct 884 - Med Hat	34.6	0.001	342
Hwy 1: Med Hat - Sask border	48.5	0.003	342
Hwy 9: Sask border - Jct 21	259.9	0.006	91
Hwy 21: Jct 1 - Jct 50	169.8	0.001	91

TABLE 4.40a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	15
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.015	1972
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	128
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	13
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Spruce Grove - Site NE	80	0.000	3
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.001	302
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Lethbridge - Site NC	210	0.001	19
Medicine Hat - Site NC	310	0.005	96
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	23
Bonnyville - Site SI	820	0.001	4
Bowden - Site SI	340	0.000	1
Calgary - Site SI	250	0.003	71
Coleman - Site SI	320	0.000	1
Cochrane - Site SI	280	0.000	1
Drayton Valley - Site SI	550	0.000	1
Edmonton - Site SI	530	0.011	118
Edson - Site SI	720	0.001	4
Ft. Mcmurray - Site SI	940	0.001	4
Ft. Saskatchewan - Site SI	560	0.002	17
Grande Prairie - Site SI	970	0.001	5
Lethbridge - Site SI	190	0.000	12
Lloydminster - Site SI	760	0.001	4
Medicine Hat - Site SI	40	0.000	4
Nisku - Site SI	500	0.001	8
Red Deer - Site SI	390	0.001	8
Redwater - Site SI	590	0.000	3
Rocky Mtn House - Site SI	460	0.000	1
Spruce Grove - Site SI	550	0.000	3
Standard - Site SI	190	0.000	1
Whitecourt - Site SI	700	0.000	2
TOTAL		0.063	3261
Loaded km travelled/yr		387430	

TABLE 4.40b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (I)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	1
Hwy 1: Calgary - Jct 561	62.0	0.003	376
Hwy 1: Jct 561 - Jct 884	177.7	0.012	352
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calgary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	65
Hwy 2: Calgary - Int 11	140.1	0.005	192
Hwy 2: Jct 11 - Jct 12	16.6	0.001	313
Hwy 2: Jct 12 - Edmonton	108.6	0.005	352
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.000	1
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	206
Hwy 15: Fort Sask - Jct 45	20.3	0.009	2397
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	21
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	2294
Hwy 16: Jct 16A - Edmtn	7.0	0.004	2088
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	2286
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	32
Hwy 28: Jct 63 - Jct 857	59.3	0.000	15
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	39
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	2410
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.41a

ROUTE SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Bonnyville - Site NE	210	0.001	15
Drayton Valley - Site NE	170	0.001	39
Edmonton - Site NE	50	0.009	1122
Edson - Site NE	250	0.001	13
Ft. Mcmurray - Site NE	380	0.001	13
Ft. Saskatchewan - Site NE	20	0.000	82
Grande Prairie - Site NE	500	0.005	41
Lacombe - Site NE	170	0.000	1
Lloydminster - Site NE	200	0.001	13
Nisku - Site NE	70	0.000	1
Red Deer - Site NE	190	0.003	114
Redwater - Site NE	30	0.000	31
Rocky Mtn House - Site NE	260	0.001	26
Spruce Grove - Site NE	80	0.000	3
Two Hills - Site NE	90	0.000	20
Whitecourt - Site NE	230	0.003	59
Bowden - Site NC	110	0.000	9
Calgary - Site NC	10	0.002	1198
Carseland - Site NC	90	0.000	1
Coleman - Site NC	240	0.002	46
Cochrane - Site NC	50	0.000	2
Lethbridge - Site NC	210	0.001	19
Medicine Hat - Site NC	310	0.005	96
Rosedale - Site NC	150	0.000	1
Standard - Site NC	100	0.000	23
Bonnyville - Site SI	820	0.001	4
Bowden - Site SI	340	0.000	1
Calgary - Site SI	250	0.004	101
Coleman - Site SI	320	0.000	1
Cochrane - Site SI	280	0.000	1
Drayton Valley - Site SI	550	0.000	1
Edmonton - Site SI	530	0.008	92
Edson - Site SI	720	0.001	4
Ft. Mcmurray - Site SI	940	0.001	4
Ft. Saskatchewan - Site SI	560	0.001	16
Grande Prairie - Site SI	970	0.001	5
Lethbridge - Site SI	190	0.000	12
Lloydminster - Site SI	760	0.001	4
Medicine Hat - Site SI	40	0.000	4
Nisku - Site SI	500	0.001	8
Red Deer - Site SI	390	0.001	8
Redwater - Site SI	590	0.000	3
Rocky Mtn House - Site SI	460	0.000	1
Spruce Grove - Site SI	550	0.000	3
Standard - Site SI	190	0.000	1
Whitecourt - Site SI	700	0.000	2
TOTAL		0.057	3264
Loaded km travelled/yr		343350	

TABLE 4.41b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: ALBERTA (III)

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Jct 22 - Calgary	18.8	0.000	1
Hwy 1: Calgary - Jct 561	62.0	0.003	379
Hwy 1: Jct 561 - Jct 884	177.7	0.012	355
Hwy 1: Jct 884 - Med Hat	34.6	0.000	113
Hwy 1A: Jct 22 - Calgary	19.8	0.000	2
Hwy 2: Fort MacLeod - Calgary	142.1	0.002	65
Hwy 2: Calgary - Int 11	140.1	0.004	165
Hwy 2: Jct 11 - Jct 12	16.6	0.001	286
Hwy 2: Jct 12 - Edmonton	108.6	0.005	325
Hwy 3: Coleman - Lethbridge	124.9	0.001	47
Hwy 3: Lethbridge - Med Hat	149.0	0.000	13
Hwy 9: Sask border - Jct 21	259.9	0.000	1
Hwy 11: Rocky Mtn Hs - Jct 2	72.6	0.000	27
Hwy 12: Jct 39 - Jct 2	107.1	0.000	1
Hwy 12&50: Jct 2 - Jct 21	42.2	0.000	1
Hwy 14,14x,16A: Edmtn - Jct 16	10.1	0.000	205
Hwy 15: Fort Sask - Jct 45	20.3	0.005	1501
Hwy 15: Jct 16 - Jct 45	45.1	0.000	13
Hwy 16: Lloyd - Jct 21	219.5	0.001	21
Hwy 16: Jct 21 - Jct 16A	2.0	0.001	1443
Hwy 16: Jct 16A - Edmtn	7.0	0.002	1238
Hwy 16: Edson - Jct 43	147.2	0.001	17
Hwy 16: Jct 43 - Edmtn	34.9	0.001	130
Hwy 21: Jct 1 - Jct 50	169.8	0.000	1
Hwy 21: Jct 15 - Jct 16	13.7	0.000	1435
Hwy 22: Jct 1A - Jct 1	12.4	0.000	1
Hwy 24: Carseland - Jct 1	26.0	0.000	1
Hwy 15,28&37: Edmtn - Jct 63	63.0	0.000	32
Hwy 28: Jct 63 - Jct 857	59.3	0.000	15
Hwy 28&28A: Jct 857 - Bonnyv	103.7	0.000	19
Hwy 34&2: Gr Prairie - Jct 43	107.5	0.001	46
Hwy 38: Jct 28 - Jct 45	25.0	0.001	59
Hwy 39: Dray Val - Jct 12	32.3	0.000	40
Hwy 39: Jct 12 - Jct 2	62.2	0.001	39
Hwy 41&28: Jct 16 - Jct 28	93.7	0.000	4
Hwy 43: Jct 34 - Whitecourt	165.1	0.002	46
Hwy 43: Whitecourt - Jct 16	129.2	0.003	107
Hwy 45: Jct 15 - Jct 36	96.8	0.001	1514
Hwy 63: Fort McMurray - Jct 18	317.0	0.001	17
Hwy 63: Jct 18 - Jct 28	18.0	0.000	17

TABLE 4.42a

ROUTE SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

ROUTE	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Manitoba - Site NE	200	0.012	223
Saskatchewan N - Site NE	200	0.005	91
Saskatchewan S - Site NC	360	0.005	91
Manitoba - Site SI	90	0.000	12
Saskatchewan N - Site SI	90	0.000	8
Saskatchewan S - Site SI	90	0.000	8
TOTAL		0.022	433
Loaded km travelled/yr		100315	

TABLE 4.42b

HIGHWAY SUMMARY TABLE

WASTE SOURCES: SASKATCHEWAN AND MANITOBA

TREATMENT SITES: INCINERATION AT SITE SI
OTHER WASTE TYPES AT SITE NC
AND SITE NE

HIGHWAY	LENGTH (km)	PROBABILITY OF SPILL ACCIDENT/YR	TRUCKLOADS PER YEAR
Hwy 1: Calgary - Jct 561	62.0	0.001	91
Hwy 1: Jct 561 - Jct 884	177.7	0.003	91
Hwy 1: Jct 884 - Med Hat	34.6	0.000	119
Hwy 1: Med Hat - Sask border	48.5	0.001	119
Hwy 15: Jct 16 - Jct 45	45.1	0.004	314
Hwy 16: Lloyd - Jct 21	219.5	0.012	314
Hwy 45: Jct 15 - Jct 36	96.8	0.000	314

accident rates statistics for three different years, the alternatives are ranked in precisely the same order with respect to estimated risk level.

4.2 Summary of Results

Table 4.43 presents a summary of the risk analysis results for each alternative treatment plant configuration. The sum of the yearly spill probabilities for all waste transport routes is adopted as the overall measure of the risk associated with an alternative.

From the results for alternatives 1 to 8, it is clear that the overall transport risk tends to be lower for the alternatives in which more than one treatment plant is available. For these alternatives, there is more freedom to choose safe routes, and travel distances are shorter. Not surprisingly, most of the variation in risk among the alternatives depends on the proximity of treatment plants to the main waste generation locations. If an alternative with one plant must be chosen, then NE is the preferred area. The addition of another plant near Calgary reduces the risk almost to the level of alternative 8, in which five treatment plants are available.

Among alternatives 1 to 8, the sensitivity of risk to changes in waste distribution is most pronounced for alternatives in which just one plant is available, either in the north or in the south. The overall risks for alternative 3 (one central site), and for 6, 7 and 8 (multiple sites) are fairly insensitive to the waste distribution assumptions.

The results for alternatives 9 to 14 show that the restriction on the routing of incinerables increases the overall risk level. For example, the two best alternatives from 9 to 14, alternatives 11 and 14, combine an incinerator plant with "other" plants in the NE and NC areas. Both are more

TABLE 4.43

SUMMARY OF SPILL PROBABILITY RESULTS

Treatment Site Alternative (Table 2.4)	Sum of Yearly Spill Probabilities for:			
	Waste Distributions in Alberta			Waste from Saskatchewan and Manitoba
	I	II	III	
1	.176	.200	.221	-
2	.076	.100	.120	-
3	.104	.110	.116	-
4	.154	.130	.109	-
5	.274	.251	.231	-
6	.138	.141	.143	-
7	.046	.043	.040	-
8	.037	.034	.032	-
9	.084	-	.128	.023
10	.159	-	.118	.028
11	.058	-	.055	.023
12	.089	-	.130	.021
13	.164	-	.120	.027
14	.063	-	.057	.022

risk-prone than alternative 7 (in which all wastes may be treated in both NE and NC) because the incinerables must be transported to one of the isolated sites. Again, the importance of proximity to Edmonton is reflected in the generally lower risks that are associated with alternatives in which the incinerator is in the NI area.

The sensitivity to waste distribution of the results for alternatives 9 to 14 shows the expected pattern: alternatives with "other" plants in both NE and NC are least sensitive to distribution assumptions.

The results for Saskatchewan and Manitoba waste are fairly insensitive to plant location, primarily because the choice of routes from Manitoba is flexible, and waste from Manitoba may enter Alberta at a point fairly close to a treatment plant.

4.3 Replication of the Transportation Risk Calculations

The calculations of risk presented in Tables 4.1 to 4.42 are based on the traffic accident rate statistics for 1977. In order to ensure that the ranking of alternative treatment plant configurations was reliable, the risk calculations were repeated for some of the alternatives for the years 1975 and 1976. Table 4.44 presents the results of this recalculation.

Table 4.44 shows that, despite an obvious downward trend in the accident rates from 1975 to 1977, reflecting an increase in the minimum accident damage that must be reported to police in the Province of Alberta, the ordering of the alternatives with respect to the spill risk is identical for the three years, for each of the three waste distributions.

TABLE 4.44

REPLICATION OF SPILL PROBABILITY CALCULATIONS

Treatment Site Alternative (Table 2.4)	Waste Distribution (Alberta I, II, or III)	Yearly Spill Probability Calculated from Accident Statistics for Year:		
		1975	1976	1977
1	I	.250	.240	.176
	II	.282	.271	.200
	III	.310	.297	.221
2	I	.131	.114	.076
	II	.164	.144	.100
	III	.194	.170	.120
3	I	.168	.146	.104
	II	.176	.154	.110
	III	.184	.161	.116
4	I	.208	.196	.154
	II	.175	.165	.130
	III	.148	.139	.109
5	I	.371	.350	.274
	II	.339	.319	.251
	III	.312	.294	.231
6	I	.197	.190	.138
	II	.198	.190	.141
	III	.199	.191	.143
7	I	.080	.070	.046
	II	.072	.064	.043
	III	.065	.059	.040
8	I	.070	.061	.037
	II	.062	.054	.034
	III	.055	.049	.032

REFERENCES

1. Alberta Transportation, Transportation Safety Branch. *Accident Rate Statistics.*

2. Bercha, F.G. and Associates Limited. *Risks Associated with the Transportation to Treatment of Hazardous Waste Substances - Phase I,* Report to the Environment Council of Alberta, 1980.

3. Reid, Crowther and Partners Limited et al. *Hazardous Wastes in Alberta.* An Inventory and Review of Practices and Technology. Volume 3, Inventory Data 1980.

4. Reid, Crowther and Partners Limited et al. *Hazardous Wastes in Northern and Western Canada. The Need for a Waste Management Strategy* Volume 1, Assessment of Need 1980.

Appendix A
Transportation Cost Estimates

Table A.1 presents estimates of the yearly waste transportation cost for treatment site alternatives 1 - 8. The estimates are computed from the route lengths and waste volumes in Tables 4.1 - 4.24 using the assumption that trips longer than 100 km. cost 8¢ per tonne-kilometer, and trips shorter than 100 km. cost 12¢ per tonne-kilometer.

TABLE A.1

TRANSPORTATION COST ESTIMATES FOR

ALTERNATIVES 1 - 8

Treatment Site (Table 2.4)	Estimates of Yearly Transportation Cost for Waste Distributions in Alberta ($)		
	I	II	III
1	1,166,360	1,403,360	1,606,460
2	866,840	1,072,840	1,249,600
3	1,043,640	1,082,320	1,116,260
4	1,491,120	1,260,920	1,066,920
5	2,553,520	2,328,560	2,140,760
6	895,540	990,540	1,072,660
7	567,220	516,820	475,120
8	498,580	448,180	406,500